

## The Airborne W-band cloud radar collects data from aboard the NOAA P3 Hurricane Hunter aircraft

### SALIENT FEATURES

- 1.3 kW Extended Interaction Klystron transmitter
- 0.7° beamwidth antenna
- High sensitivity of -32 dBZ at 5 km
- W-band transceiver pod may be mounted in the hold of the P3 aircraft, or operated on a stabilized platform for ship deployments
- Pod may be configured as antenna-down or antenna-up
- Automatic blanking of transmitter pulse below a minimum programmed platform altitude
- Data output in netCDF format

The airborne W-band radar makes cloud measurements over a distance of up to 15 km.

### EIK Transmitters

The Extended Interaction Klystron (EIK) transmitters provide high output power, and enable excellent sensitivity, without the range-doppler coupling and ambiguity inherent to FMCW radar systems.

### High Power Duplexer

The latching-circulator based duplexer assembly switches rapidly between transmit and receive modes, while maintaining high isolation between transmit and receive paths. This enables high-power pulsed mode operation at W-band.

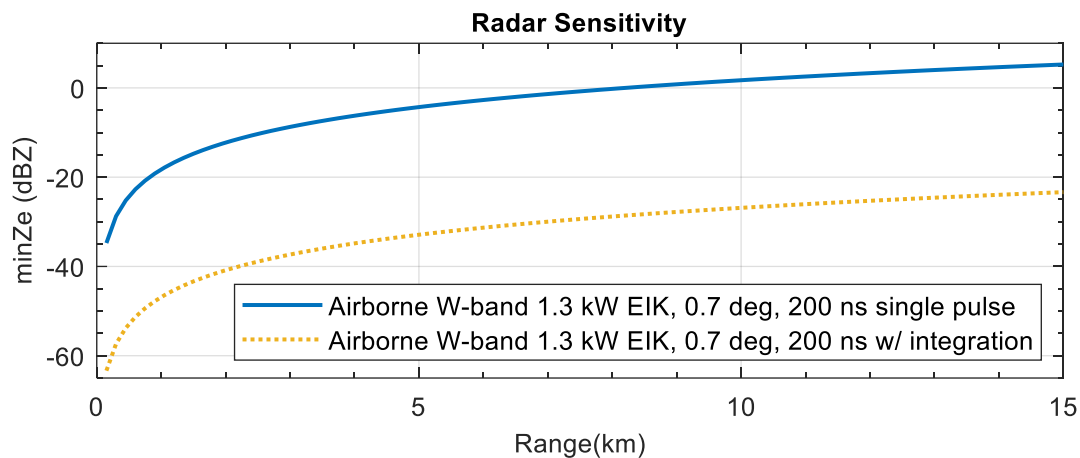
## Technical Specifications

SYSTEM SPECIFICATIONS	
Radar Type	Pulsed Doppler
Polarization Modes	Single-polarization
Frequency range	94.56 GHz
Beam width	0.7°
Along-range resolution	Typ. 30m, configurable between 15-150m
Sensitivity	-32 dBZ at 5 km
Max. Range	15 km
Noise figure	7 dB

ANTENNA	
Type	Center-fed parabolic
Reflector diameter	300 mm
Gain (at 5.6 GHz)	45 dBi
Half-power beam width	< 0.7°
Sidelobes at $\pm 45^\circ$ planes	< -15 dB
Return Loss	> 15 dB

TRANSMITTER	
Amplifier Type	Extended Interaction Klystron
Peak/Avg power	1.3 kW/3W
Pulse width	0.1-5 $\mu$ s
Duty Cycle	1% maximum
Pulse Repetition Frequency	2 – 10 kHz, continuously variable

SIGNAL PROCESSING	
Signal processor	PIRAQ-3, LapXM
FFT points	64 - 256 pulses
Averaging	8 FFTs, typical
Data outputs	SNR, dBZ, Vertical Velocity, Spectrum Width
IF digitization	14 bit, 48 MHz
Number of range bins	Up to 256
Processing mode	FFT
Range resolution	15m-150m



### Radar Rack and Data Storage

The radar rack houses the data acquisition and signal processing computers. These also store the collected data and may be transferred in real-time or via post-flight download.

### Optional Radar Shelter

The radar may optionally be deployed in a ground-based configuration, with a 20-foot ISO shipping container serving as the radar operations shelter. The antenna points up through a window cut into the top of the container. An optional

stabilization system permits shipboard deployments.

### Contact information

For more information about the Airborne W-band radar, please contact:

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